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ABSTRACT

An overview is provided of the development of the statewide computer-assisted Student On-Line Advisement and Articulation (SOLAR) system in Florida. After providing background information on the history and current status of articulation and transfer in Florida and on a 1986-87 pilot study of the feasibility of implementing the SOLAR system, the paper explains the three major categories of information that have been incorporated into the system: (1) an overview of information on the transfer process, including guidelines applicable to all universities, application procedures, and the benefits of transferring with an associate degree; (2) general admissions requirements, including information on contacts for student admissions, housing and financial aid, estimated student costs, acceleration mechanisms, application deadlines, admission requirements, and a listing of programs with special admission requirements; and (3) course and admission requirements for a major, which offers students information on general education and upper-level requirements for any combination of community colleges and universities. The next section explains the features of the the state's computer system on which SOLAR is mounted. After explaining the seven steps involved in collecting and verifying information for SOLAR from the community colleges and universities, the paper considers database maintenance and the three-year schedule under which SOLAR is being implemented. Finally, concluding comments highlight the accomplishments to date of the SOLAR system. (MCB)

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This paper explains the procedures and policy implications of implementing a statewide computer-assisted student on-line advisement and articulation system (SOLAR). Articulation is defined as the movement of students through the educational system from one institution to another, more specifically from a community college to a university. To accomplish smooth articulation between Florida's 28 community colleges and nine state universities, a massive amount of information needs to be available to the transfer student. SOLAR is a vehicle for providing this information on an accurate and timely basis. It is a computer network that reaches into the counseling and advisement offices in each postsecondary institution in the state.

BACKGROUND

In Florida, approximately 10,000 students transfer from the community college system to the state university system every year. In order for these students' to compete with native university students for limited access programs and to complete their education with a minimum loss of time and credit, they must have access to comprehensive, accurate and timely academic and admissions information. Computerization of an academic advisement and articulation system utilizes the delivery capabilities of new technologies to meet this objective. However, before computerization could begin, a system for transferring between the community colleges and universities needed to be in place. Such a system has been established in Florida since 1950.

From the inception, Florida's postsecondary system was designed to be a 2 + 2 system. Between 1958 and 1971, six new universities were established in Florida, bringing the total to nine. Four of the new universities were upper-level only, enrolling only junior and senior students. The remaining five had severe limitations placed on lower-level enrollments by the legislature and the Board of Regents. The state policy limiting lower-level enrollment at the universities clearly established community colleges as the primary entry point for students into the postsecondary system.

During the same period of time, 24 additional community colleges were built, bringing the total to 28. Postsecondary education was now within commuting distance of virtually everyone in the state. Articulation between systems now became extremely important in order to make this "2 + 2" arrangement work. Students would be the losers if it failed.

In 1959, the first articulation agreement was established. The agreement guaranteed the transfer of all general education courses -- defined by the community colleges -- from the community colleges to the universities. The General Education Agreement, as it became known, prohibited the universities from requiring any additional lower division general education courses as a condition for receiving a baccalaureate degree.

The agreement was modified in 1971. The new Articulation Agreement defined the Associate in Arts degree as the transfer degree, reconfirmed the General Education Agreement, established a common college transcript and calendar, and created the Common Course Numbering System and the Articulation Coordinating Committee.

The Common Course Numbering System established a common database of instruction. Through faculty-to-faculty evaluations of course curriculums, common course numbers were assigned, thereby facilitating the transfer of courses from one institution to another. The Articulation Coordinating Committee, composed of three representatives each from the state university system, the community college system and the public school system, and one from vocational education and the office of the Commissioner of Education, was designed to adjudicate institutional or student conflicts, interpret the Agreement, recommend amendments, and perform other tasks which would facilitate articulation.

Florida's 2 + 2 system now had in place the foundation for students to articulate from a community college to a university. The new focus of articulation now turned to the mechanics of making the system work, including improving upon the dissemination of accurate and timely information.

Although universities are required by law to accept the Associate of Arts degree as a transfer degree, state rules permit each state university to limit access to certain academic programs. Because student demand can exceed the faculty or facilities available, universities designate certain programs as limited access. The admission requirements for limited access programs often exceed the general admission requirements for the university. Consequently, a student may be admitted to the university, but such admission does not guarantee acceptance into the program of choice.

The same requirements for limited access programs are also placed on native university students. However, development of the lower- and upper-level program curriculums within the same institution is better coordinated. Therefore, it is critical for community college students to have accurate information on limited access programs in order to compete and adequately prepare for admission to a chosen program of study.

Timely and accurate information is the key to smooth articulation. To ensure this smooth transition, a massive quantity of data must be

assembled to provide for all the options and permutations that students face. The Division of Community Colleges, in compliance with a legislative mandate to computerize student advising, undertook the development of a Student On-Line Advisement and Articulation System (SOLAR). The premise behind SOLAR was to provide course and admission requirements students would need to facilitate their transfer between institutions, primarily between the community colleges and state universities. Students would be able to key in any combination of colleges and universities along with a selected program of study and receive institution-specific information on admissions and program course requirements.

THE SOLAR PILOT STUDY

Initially, a pilot study was undertaken in 1986-87 to determine the feasibility of implementing a statewide computer-assisted advisement and articulation system. Seven community colleges and three universities were selected to participate in the pilot study. The study included: 1) developing the program specifications; 2) establishing data collection procedures; and 3) creating a computer-based delivery system. All of the above components of the program were developed concurrently with the collection and verification of the data.

PROGRAM SPECIFICATIONS

To provide a comprehensive articulation and advisement program, three major categories of information needed to be on the system.

1. Transfer Information: An Overview of Information on the Transfer Process

2. General Freshmen and Transfer Student Admissions Requirements

3. Admissions and Course Requirements for Each Program Major

Accounting, biology, computer science, electrical engineering, elementary education and psychology were selected as the major program areas. It was estimated that 90% of the student body was enrolled in one of these six programs.

TRANSFERRING TO A UNIVERSITY: AN OVERVIEW This section of SOLAR contains the guidelines for transferring and the procedures for submitting an application. The information is standardized and applies to all universities. It is designed as a check-off list for students, listing step by step the various procedures that are involved when transferring to a university. Two sections are included that speak directly to community college students: transferring without an associate in arts (AA) degree and the benefits of transferring with an AA degree.

Because the information in this section applies to all universities, it is intended to be information that a student would receive one time, requiring only a periodic review to see if general policies had changed. It is also intended to alert community college students to the potential liabilities of transferring without an AA degree, which means that course and transfer credits are not guaranteed under the Articulation Agreement, but are evaluated based on the university's general admission requirements.

GENERAL ADMISSIONS REQUIREMENTS In the year prior to the pilot study, the Division of Public Schools established Admissions Workshops for high school counselors. In conjunction with the workshops, the "Counseling for Colleges Handbook" was developed and distributed to public school and community college counselors throughout the state. It contained the freshmen admission requirements of the 28 community colleges, nine universities, and 23 private universities. The "Counseling for Colleges Handbook" became the data collection vehicle for the GENERAL ADMISSIONS REQUIREMENTS section of the SOLAR program.

The program specifications and formatting for this section were designed to reflect the information used for the "Counseling for Colleges Handbook". The information included contacts for student admissions, housing and financial aid, estimated annual expenses for freshmen, acceleration mechanisms, application deadlines, admission requirements and a listing of programs with special admission requirements. (See Figure 1)

COURSE AND ADMISSION REQUIREMENTS FOR A MAJOR The major data collection effort was concentrated in this section, which was developed to provide the user with course and admission requirements for a specific major for any combination of community colleges and universities. The program screen gives the student three instructions: 1) from the list of community colleges, choose the one that you're most likely to attend; 2) choose the state university you are considering; and 3) record the code number of the major in which you are interested. From this information the program provides the student with a printout that contains: the College within the university that awards the degree; the program degree; the requirements for an AA degree at the community college selected; including general education requirements and lower-level course listings; and the university upper-level course and admissions requirements for the program the student selected.

The community colleges general education information includes the number of semester hours needed in each general education area, the number of elective hours remaining and the total number of credits needed for an Associate in Arts degree.

For the lower-level course offerings, the community college listed all the courses offered which pertained to the major. The list of course offerings included the course prefix and number, the course name, the number of semester hours earned and whether or not it met any of the

general education requirements. Exceptions were also noted. The key to the program was the codes assigned to identify whether the course was required or suggested and at what level it should be taken. (See Figure 2)

Four codes were developed -- R, RC, S and +.

- o R indicates a course that is required for the university major and must be taken at the community college or the university to complete a baccalaureate degree;

- o RC identifies a course that is required for the university major and must be taken at the community college or in a university lower division program prior to admission to the upper division university program (major);

- o S is a course that is suggested for the university major; and

- o A plus sign (+) indicates the course(s) that the community college recommends taking prior to transferring.

The upper-level course information included the course prefix, number, name and number of semester hour credits, along with the program admission requirements. This information is provided by the departments responsible for the program at the universities.

It was critical the information be accurate, understandable, comprehensive, and accessible to students. How to network the information to the students was the the next step.

CHOICES

The State of Florida has two "official" network systems FIRN (Florida Information and Resource Network) and CHOICES (Computerized Heuristic Occupational Information and Career Exploration System).

FIRN is primarily a system that is utilized by administrative personnel for state-mandated reporting requirements, retrieval and reporting of student-based educational system, and for conveying timely and accurate information. It is networked on IBM's System Network Architecture (SNA) and TYMNET'S networking system. Bridges between the two have been provided, allowing users to reach systems attached to the other.

CHOICES, on the other hand, is an academic and career planning system that is accessible to students and faculty, as well as administrators. CHOICES is administered by the Center for Career Development, which contracts with the Department of Education and other educational entities to provide career counseling information.

The CHOICES computer program is presently housed on a Burroughs 2930 medium-sized mainframe computer. CHOICES is accessed and operated in a Poll-Select protocol environment using dedicated-line multidrop circuits, as well as a small number of dial-up ports. The communications network is accessed through three primary configurations:

1. Using a Burroughs video display terminal (SR110) with a 90 CPS printer (Burroughs AP310) and a Burroughs 2400 BPS synchronous modem (CP2003);

2. Using an IBM-type personal computer as a Burroughs terminal-emulation device through the use of a card and software package developed by International Community Cooperative (ICC). This configuration also utilizes the Burroughs modem (CP1002);

3. Using microcomputers to dial-up a TYMNET micro-engine to access the CHOICES mainframe through the FIRN Network. The FIRN provides 300-1200 BPS asynchronous access to CHOICES. This configuration is only found in 20 out of 200 locations.

CHOICES was selected as the networking system primarily because of its accessibility to students, faculty and counselors, but also because the nature of SOLAR would complement the other career counseling files on the CHOICES system.

SOLAR became the fifth file on the system, which already included a CAREER INFORMATION file with over 1,200 career listings, an EDUCATION file, which listed the programs of study at all of the postsecondary institutions, a FINANCIAL AID file containing 2,000-plus financial aid offerings, and an EMPLOYERS file which contains a listing of job openings in the state by area. With the addition of SOLAR, students could determine their academic plan, as well as, their career plan from one centralized system. (See Figure 3)

DATA COLLECTION PROCEDURES

The process of collecting information for SOLAR is a series of steps, in which the completion of each step is contingent upon the completion of the step before. Seven steps comprise the data collection procedures. They are listed below with the general time frames allotted for each.

Step 1

Community colleges submit to the Division of Community Colleges their general education requirements, all possible course offerings for the university major, and related comments. (4-6 weeks) (See Figure 4)

Concurrently, universities provide to the Division of Community Colleges their upper-level information by major to include admission requirements,

upper-level courses for the university major, and related comments. (4-6 weeks)

Step 2

Data is entered into the SOLAR system and verified. (3-4 weeks)

Step 3

Printouts containing the community college and university course information are generated and sent to each university. The university then reviews the information for content and transferability of courses. Universities may need to make revisions to the community college information based on university and departmental policy. Any changes are noted directly on the printout. Universities contact individual community colleges directly regarding any discrepancies in the information prior to adding, changing, or deleting any information. Printouts of the upper-level information are also submitted to the universities for verification. (8-10 weeks)

Step 4

After verifying the transferability and accuracy of the information, a representative of the university signs the printouts and forwards them to the Division of Community Colleges for revision in the database. Universities also submit any changes to their upper-level information at this time. (Included in timeframe for Step 3)

Step 5

After the university-submitted revisions are made, updated printouts are sent to each community college and university to review. At this time, the information goes on-line with a disclaimer stating that it is under review and subject to change. If the community college has a concern regarding university-submitted changes to the community college course information, the community colleges discuss the concern directly with the university in concern. If the concern cannot be resolved, the established procedures for arbitrating articulation matters are followed. Changes to the course information are made only at the direction of the university. (2-3 weeks)

Step 6

Minor editorial changes only are noted directly on the printout and submitted to the Division of Community Colleges. (Included in the timeframe in Step 5)

Step 7

The revisions are incorporated into the database and SOLAR goes on-line with the date the information was verified.

MAINTENANCE OF THE DATABASE

When enrolling in a community college or university, students are responsible for meeting the requirements of the university catalog effective at the time of their matriculation. On the other hand, the university is bound by the requirements printed in the catalog, provided that the student maintains continuous enrollment, which is defined independently by each of the universities and stated in the university catalog. The SOLAR program is a snap-shot view of the current catalog year.

Each printout of course requirements contains a statement indicating: the academic year on which the course requirements are based; the date the information was last updated, and a disclaimer stating that the information is subject to change during the course of the academic year. This statement serves to verify the accuracy of the information contained in the program and relates it to the appropriate catalog year.

The data can be changed at any time, as programs are added or deleted and as program numbers and names change. However, the major time period for revision occurs simultaneously with the annual catalog revisions done by the colleges and universities -- between the months of December and April. The procedures for revision consist of submitting to the participants a printout of the database with lines directly below each corresponding piece of data on which to record changes. A space is also provided in the left-hand margin to indicate if the information is to be changed, added or deleted. After the information is revised, the appropriate representative signs the printout and returns it to the Division of Community Colleges. The printouts with noted changes, are then forwarded to the universities for verification. The universities sign-off on the changes. The revisions are made to the database and the verified data is changed to reflect the new catalog year.

OPERATIONAL SCHEDULE Due to the amount of data being generated and the extensive verification process involved, all of the public universities and community colleges could not be put on the system at the same time. Therefore, a three-year operational schedule was designed. The schedule phases in the community colleges and universities at six-month intervals, keeping the six major program areas constant. The 28 community colleges were broken into four groups of seven and the nine universities were divided into three groups of three.

During the pilot study, several "program clusters" were identified in which the lower-level course and admission requirements remained consistent while the upper-level course requirements changed slightly, making it possible to expand the program majors offered with a minimum number of data entries. Other programs comprising the College of Biology, the College of Business and The College of Engineering were added to the system by making minor course changes, thereby initially expanding the number of majors from six to 52.

Currently, all the data for all 28 community colleges and nine universities are on the SOLAR system to some degree. (See Figure 5) Over the course of the next two years, all of the institutions will be on the system in their entirety, including the expanded program majors identified in the pilot study.

At the conclusion of the three-year operational schedule, the principal components of the SOLAR project will be in place and operational. Twenty-eight community colleges will be able to interface with nine universities in six major program areas, plus the cluster information.

In addition, two new components are in the preliminary stages of development. The university lower-level program has been added to the system for the first set of universities and will be expanded to include the other six universities. This option provides students with a complete printout of the university course offerings in the six major program areas beginning with the freshmen program through the upper-level.

A pilot study is also being conducted to determine the feasibility of adding the secondary schools to SOLAR. The secondary information would include a listing of courses and enhancement programs at each high school in the state. Courses meeting college prep standards and acceleration mechanisms would be so designated, allowing students in high school to begin their academic planning in the ninth grade.

Other areas under discussion include providing the course listing for the general education area and expanding the system to include vocational offerings.

CONCLUSION In Florida, the 2 + 2 system is successfully operating. But, as with many systems, it can be improved upon. Critical to the success of the system is the students' accessibility to comprehensive, accurate, and timely information. New technologies and the current state of articulation in Florida have afforded the opportunity to computerize the academic advisement system through the creation of the Student On-Line Advisement and Articulation System (SOLAR).

The development of SOLAR has:

- computerized admission and course requirements so that accurate information can be obtained in a timely fashion by consulting one centralized database;
- improved the accessibility of information, thereby aiding students and counselors in academic planning;
- enhanced the articulation of students from the community colleges to the universities by making information available, thereby minimizing unnecessary delays in admissions and duplication of courses; and

- provided a system that allows students and counselors to compare educational programs and other enhancements at both the community colleges and universities.

The development and implementation of SOLAR, the Student On-Line Advisement and Articulation System, was the next logical step in the continuing evolution of Florida's 2 + 2 System. SOLAR ushered in new era in academic planning that will serve and advise future generations of students desiring to pursue a higher education.

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